

Frequently Asked Questions (FAQ)

About *Principles and Standards for School Mathematics*

In Prekindergarten to Grade 2

What are the emphases of the curriculum for prekindergarten to grade 2?

It is essential that every child develop a solid mathematical foundation. At the core of the program should be number and geometry. Numbers and their relationships, operations, place value, spatial relationships, and attributes of shapes are examples of important ideas that should receive focused attention. The other content areas contribute to, and are learned in conjunction, with number and geometry.

Does *Principles and Standards* support teaching the "basics"?

Absolutely. Fluency—efficient and accurate methods—with basic single-digit addition and subtraction combinations is a goal for these grades. Students should learn basic number combinations using strategies that make sense to them. They should also begin to extend their computational methods to work with larger numbers.

How can differences in student progress be accommodated?

Mathematics concepts develop at different times and rates for each child. Multiple, varied experiences provide opportunities for students make mathematical concepts their own. All students need adequate time and opportunity to develop, construct, test, and reflect on their increasing understanding of mathematics. Early education must build on the expectation that all students can learn significant mathematics.

What does *Principles and Standards* say about the use of technology, including calculators, in the mathematics classroom?

Students should have access to a full range of tools and the guidance of teachers skilled in using tools to support the learning of mathematics—these tools are a part of their world. However, "technology should not be used as a replacement for basic understanding and intuitions; rather, it can and should be used to foster those understandings and intuitions." In fact, students can learn more mathematics more deeply with the appropriate use of technology.

Calculators should be used with the goal of supporting and enriching students' learning of mathematics. However, *Principles and Standards* states, "calculators do not replace fluency with basic number combinations, conceptual understanding, or the ability to formulate and use efficient and accurate methods for computing. Rather, the calculator should support these goals by enhancing and stimulating learning." Calculators can enable students to work with larger numbers and more complex situations.

Should students start to study mathematics in preschool?

Absolutely. Mathematics is a natural part of children's worlds. Mathematics learning should build on their curiosity and enthusiasm and be connected to their experiences, rather than focusing on "getting ready" for school or accelerating them into elementary arithmetic. Opportunities to learn should be positive and supportive, so that they can develop a mathematical disposition.

What is the role of representation in pre-K–2?

Young children use varied representations to both build new understandings and express mathematical ideas, including oral and written language, physical gestures, drawings, and invented and conventional symbols. The process of connecting different representations of the same idea deepens their understanding. Thus, teachers should encourage the use of multiple representations of an idea. Students' use of standard mathematical symbols will grow rapidly during this period when incorporated into the instructional process and used with understanding.

What experiences should students in pre-K–2 have in Reasoning and Proof?

Although young students have yet to develop all the tools used in mathematical reasoning, they should have ways to convince themselves that their thinking is correct, including perception, empirical evidence, and short chains of deductive reasoning. They should be encouraged to make conjectures and reach conclusions that are logical and defensible.